

CLAIMS

2. A data synchronization apparatus for maintaining synchronization between a source data file and a copy data file comprising:

a bulk copy controller capable of copying a plurality of data records from said source data file to said copy data file; and

an update controller capable of detecting a change in a data record previously copied by said bulk copy controller from said source data file to said copy data file and copying said changed data record from said source data file to said copy data file, wherein said update controller and said bulk copy controller operate substantially concurrently.

3. The data synchronization apparatus set forth in Claim 2 wherein said source data file comprises at least one data table comprising a plurality of data records and a synchronization descriptor associated with said at least one data table.

4. The data synchronization apparatus set forth in Claim 3 wherein said bulk copy controller sequentially copies said plurality of data records in said at least one data table in said source data file to said copy data file and sets said synchronization descriptor to an index value of a most recently copied one of said plurality of data records.

5. The data synchronization apparatus set forth in Claim 4 wherein said update controller detects changes in said plurality of data records in said at least one data table in said source data file by monitoring selected ones of said plurality of data records in said at least one data table in said source data file having an index value less than said index value in said synchronization descriptor.

6. The data synchronization apparatus set forth in Claim 5 wherein said update controller detects said changes in said plurality of data records in said at least one data table in said source data file by monitoring data write operations in said plurality of data records in said at least one data table in said source data file.

7. The data synchronization apparatus set forth in Claim 6 wherein said update controller is capable of detecting that said copy data file is off line and has lost synchronization with said source data file.

8. The data synchronization apparatus set forth in Claim 7 wherein said update controller is capable of determining that said copy data file is on line and is capable of activating said bulk copy controller by setting at least one synchronization descriptor in said source data file to a zero value.

10. A telecommunications device comprising:
 - a primary processing system comprising a first memory capable of storing a source data file;
 - a secondary processing system comprising a second memory capable of storing a copy data file; and
 - a data synchronization apparatus coupled to said first and second memories for maintaining synchronization between said source data file and said copy data file, said data synchronization apparatus comprising:
 - a bulk copy controller capable of copying a plurality of data records from said source data file to said copy data file; and
 - an update controller capable of detecting a change in a data record previously copied by said bulk copy controller from said source data file to said copy data file and copying said changed data record from said source data file to said copy data file, wherein said update controller and said bulk copy controller operate substantially concurrently.
11. The telecommunications device set forth in Claim 10 wherein said source data file comprises at least one data table comprising a plurality of data records and a synchronization descriptor associated with said at least one data table.
12. The telecommunications device set forth in Claim 11 wherein said bulk copy controller sequentially copies said plurality of data records in said at least one data table in said source data file to said copy data file and sets said synchronization descriptor to an index value of a most recently copied one of said plurality of data records.
13. The telecommunications device set forth in Claim 12 wherein said update controller detects changes in said plurality of data records in said at least one data table in said source data file by monitoring selected ones of said plurality of data records in said at least one data table in said source data file having an index value less than said index value in said synchronization descriptor.
14. The telecommunications device apparatus set forth in Claim 13 wherein said update controller detects said changes in said plurality of data records in said at least one data table in said source data file by monitoring data write operations in said plurality of data records in said at least one data table in said source data file.
15. The telecommunications device set forth in Claim 14 wherein said update controller is capable of detecting that said copy data file is off line and has lost synchronization with said source data file.

16. The telecommunications device set forth in Claim 15 wherein said update controller is capable of determining that said copy data file is on line and is capable of activating said bulk copy controller by setting at least one synchronization descriptor in said source data file to a zero value.

18. A method of maintaining synchronization between a source data file and a copy data file comprising:

sequentially copying a plurality of data records from the source data file to the copy data file; and

detecting a change in a data record previously copied in the step of sequentially copying and copying the changed data record from the source data file to the copy data file, wherein the step of sequentially copying and the step of detecting a change are performed substantially concurrently.

19. The method as set forth in Claim 18 wherein the source data file comprises at least one data table comprising a plurality of data records and a synchronization descriptor associated with the at least one data table.

20. The method as set forth in Claim 19 wherein the step of sequentially copying comprises the substeps of:

sequentially copying the plurality of data records in the at least one data table in the source data file to the copy data file; and

setting the synchronization descriptor to an index value of a most recently copied one of the plurality of data records.

21. The method as set forth in Claim 20 wherein the step of detecting a change comprises the substep of monitoring selected ones of the plurality of data records in the at least one data table in the source data file having an index value less than the index value in the synchronization descriptor.

22. The method as set forth in Claim 21 wherein the step of detecting said changes in said plurality of data records in said at least one data table in said source data file is by monitoring data write operations in said plurality of data records in said at least one data table in said source data file.

23. The method as set forth in Claim 22 wherein the step of detecting said changes is capable of detecting that said copy data file is off line and has lost synchronization with said source data file.

24. The method as set forth in Claim 23 further comprising the step of determining that said copy data file is on line and is capable of activating a bulk copy controller by setting at least one synchronization descriptor in said source data file to a zero value.